

ABSTRACT OF THE DISCLOSURE

Catalyst systems and methods for olefin polymerization are disclosed. The polymerizations are performed in the presence of a clathrochelate which comprises a transition metal ion and an encapsulating macropolycyclic ligand. At least one of the capping atoms of the macropolycyclic ligand is a Group 3-10 transition metal or a Group 13 atom. When a capping atom is a Group 3-10 transition metal, the clathrochelate can be used with an activator to polymerize olefins. When a capping atom is a Group 13 atom, the clathrochelate can be used as an activator for an olefin polymerization. Clathrochelates allow polyolefin makers to fine tune catalyst reactivity and polyolefin properties.